California GARDEN

SEPTEMBER—OCTOBER 1984
Seventy-five Cents
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HORTICULTURE CALENDAR

SEP 1, 2

SAN DIEGO ASSOCIATION PROFESSIONAL HORTICULTURISTS' 1ST SHOW
Casa del Prado, Majorca Room, Balboa Park, San Diego
Sat: 10:00 a.m. to 5:00 p.m. Sun: 11:00 a.m. to 4:30 p.m. Free

SEP 6, 13, 20, 27
San Diego Floral Event

THURSDAY WORKSHOP WITH COLLEEN WINCHELL
Free Floral Crafts Instructions — Open to the Public
San Diego Floral Association Library, Casa del Prado, Balboa Park, San Diego
10:00 a.m. to 3:00 p.m. Information: 479-6433

SEP 15, 16

SAN DIEGO DAYTIME AFRICAN VIOLET SOCIETY 3RD ANNUAL SHOW
Casa del Prado, Majorca Room, Balboa Park, San Diego
Sat: 10:00 a.m. to 5:00 p.m. Sun: 10:00 a.m. to 4:00 p.m. Free

SEP 22, 23

SAN DIEGO ROSE SOCIETY "GREEN THUMB" SHOW
San Diego Wild Animal Park, Escondido, Calif.
Sat. & Sun: 9:00 a.m. to 5:00 p.m.

SEP 22, 23

SAN DIEGO BROMELIAD SOCIETY 10TH ANNUAL SHOW
Casa del Prado, Majorca Room, Balboa Park, San Diego
Sat: 1:00 to 5:00 p.m. Sun: 11:00 a.m. to 5:00 p.m. Free

SEP 22, 23

SAN-PU-KAI SOCIETY BONSAI EXHIBIT & DEMONSTRATIONS
Quail Botanical Gardens Foundation, Encinitas, Calif.
Sat. & Sun: 10:00 a.m. to 4:00 p.m. Free

SEP 29 & 30

SAN DIEGO BONSAI SOCIETY FALL SHOW
Casa del Prado, Majorca Room, Balboa Park, San Diego
Sat: 10:00 a.m. to 5:30 p.m. Sun: 10:00 a.m. to 5:00 p.m. Free

OCT 4, 11, 18, 25
San Diego Floral Event

THURSDAY WORKSHOP WITH COLLEEN WINCHELL
Free Floral Crafts Instructions — Open to the Public
San Diego Floral Association Library, Casa del Prado, Balboa Park, San Diego
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OCT 6, 7

BALBOA PARK AFRICAN VIOLET FALL MINI SHOW
Casa del Prado, Majorca Room, Balboa Park, San Diego
Sat: 10:00 a.m. to 5:00 p.m. Sun: 10:00 a.m. to 4:00 p.m. Free

OCT 7

SAN DIEGO BOTANICAL GARDEN FOUNDATION OCTOBER FAIRE
Displays & Demonstrations by Member Organizations
Casa del Prado, Room 104 & Patio "A", Balboa Park, San Diego
Sun: 10:00 a.m. to 5:00 p.m. Free

OCT 13, 14

PALOMAR ORCHID SOCIETY 9TH ANNUAL FALL SHOW
Plaza Camino Real, 2525 El Camino Real, Carlsbad, Calif.
Saturday & Sunday

OCT 13, 14, 15

ANNUAL PLANT SALE & "BEAUTY & BEAST FLOWER SHOW"
San Diego Wild Animal Park, Escondido, Calif.
Sat., Sun. & Mon: 9:00 a.m. to 5:00 p.m.

OCT 16
San Diego Floral Event

SAN DIEGO FLORAL ASSOCIATION MEETING & 3RD OCTOBERFEAST
Casa del Prado, Majorca Room, Balboa Park, San Diego
Spaghetti Dinner/Program/Auction: $2.50 Information: 232-5762 (10:00 a.m. to 3:00 p.m., Mon/Fri)
Reservations—no later than October 10th! (See Ad — this issue.)
Tuesday, 6:30 p.m.

OCT 20 & 27
San Diego Floral Event

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OCT 20

SAN DIEGO CHAPTER, CALIFORNIA NATIVE PLANT SOCIETY ANNUAL PLANT SALE
Casa del Prado, Patio "A", Balboa Park, San Diego
Sat: 10:00 a.m. to 3:00 p.m.

OCT 20, 21

ICHIYO SCHOOL OF IKEBANA, SAN DIEGO CHAPTER, 3RD ANNIVERSARY FLOWER SHOW "COLORFUL AUTUMN" (Aki-no-Irodori)
Casa del Prado, Majorca Room, Balboa Park, San Diego
Sat. & Sun: 11:00 a.m. to 4:00 p.m. Free

OCT 27, 28

SOGETSU SCHOOL OF IKEBANA, SAN DIEGO CHAPTER, 4TH EXHIBIT OF FLOWER ARRANGING
Casa del Prado, Majorca Room, Balboa Park, San Diego
Sat. & Sun: 11:00 a.m. to 4:30 p.m. Free

OCT 27, 28

NORTH SAN DIEGO COUNTY ROSE SOCIETY 18TH ANNUAL ROSE SHOW
Plaza Camino Real, 2525 El Camino Real, Carlsbad, Calif.
Sat: 1:00 to 6:00 p.m. Sun: 12:00 to 4:00 p.m. Free

NOV 3, 4

SAN DIEGO TROPICAL FISH 14TH ANNUAL AQUARIUM SHOW
Casa del Prado, Majorca Room, Balboa Park, San Diego
Sat: 12:00 to 6:00 p.m. Sun: 9:00 a.m. to 4:00 p.m. Free

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Front Cover: Sunflowers by Pat Maley. Pat's drawings are botanically accurate; she first grew and studied plants before studying art. She is now a free-lance artist living in Placerville, California.

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RARE PLANTS AND THEIR VALUE

Text & Photos by Thomas A. Oberbauer

CLEVELAND'S GOLD STARS, *MUILLA CLEVELANDII*, IS FOUND IN SOUTHWESTERN SAN DIEGO COUNTY. THIS IS ONE OF THE PLANTS NAMED FOR DANIEL CLEVELAND, A BOTANIST AND PLANT COLLECTOR IN THE LATE 1880'S AND EARLY 1900'S.

PROTECTION OF SENSITIVE species has become a primary focus of those interested in the preservation of our natural environment. A number of California State and Federal laws have been enacted to protect rare and endangered plants.

Considering that the alternative to protection of sensitive species is extirpation or extinction, there are a number of good reasons for great concern over the status of rare and endangered species. These reasons are practical or based on humanistic and idealistic values.

WHAT AND WHERE ARE RARE AND ENDANGERED PLANTS?

Before discussing the value of rare plants, let us briefly examine the "what" and "where" of California's 1300 rare plants. Due to the Mediterranean climate and past geologic and biological conditions, California contains a large native flora and a large number of endemics (species found nowhere else). Certain habitats all over California contain concentrations of endemics, including soils derived from serpentine and other unique rock types, vernal pools, dune systems, isolated mountain tops, deep canyon areas, and coastal closed cone pine and cypress woodlands. These endemic plants may be ancient with well known fossils such as the giant sequoia or they may be newly evolved forms such as some of the coastal annual grasses and wildflowers. Large scale urban and agricultural development has been responsible for threatening many of these plants with extinction. Notable areas in California with concentrations of rare and endangered plants are San Diego, Big Bear Lake northeast of Los Angeles, the Channel Islands, San Luis Obispo, Monterey, Point Reyes, San Bruno Mountain near San Francisco, portions of the Central Valley, parts of the Sierra Nevada, and Death Valley.

PRACTICAL REASONS FOR THE PROTECTION OF RARE SPECIES

The primary reason for concern about sensitive and rare species is that they are indicators of sensitive and rare habitats. As defined, a plant's habitat consists of a large variety of environmental factors including soil, climate, slope aspect, and associated species. The habitat of an individual species is a special combination of factors. In a habitat, the species are arranged in a delicate balance with one another and with their environment, due to a long process of evolution.

Species of plants and animals are thus dependent

upon one another. Examples of a specialized case would be members of the genus *Yucca* which are pollinated by specific moths. Without the moths, yuccas would not reproduce and without yuccas, the moths would not survive.

Just as each species has a place in its habitat, all habitats have their place in the world's ecosystem and are arranged in a delicate balance. For example, clearing of tropical rainforest may affect California vegetation through changing global climates by influencing oxygen levels and solar insolation absorbed by the earth.

In order to maintain the natural diversity of the planet earth, it is important to maintain all of the component habitats or ecosystems. Each component, species, habitat, or biome affects all others in some way. If its balance is disrupted, the entire global ecosystem is incrementally disrupted.

When an individual species is endangered, it is usually due to the loss of its habitat. For example, members of the vernal pool genera *Neostapfia* and *Orcuttia* are now rare and endangered because their habitat in the Central Valley and coastal southern California has been reduced by agriculture and urbanization. Along similar lines, feral goats, sheep, and rabbits have completely destroyed the habitats for a number of species that were at one time relatively common on the California Channel Islands.

It is also due to the importance of a species' natural habitat that the concept of transplantation should not be considered a viable mitigation measure to preserve species. It may be possible to maintain individual plant specimens outside their habitat, such as in botanic gardens, for a few years. However, without its complete habitat, including associated organisms, a species cannot reproduce indefinitely and maintain its genetic integrity. Transplanted rare plants usually eventually die anyway.

Another reason that rare and endangered species are important is their potential scientific value. Frequently the rare member of a genus or family demonstrates a factor enabling researchers to determine the taxonomic relationship of the entire group. Rare plants often contain unusual and interesting adaptations of extreme environmental conditions, toxic soils and evolutionarily interesting habitats. Basic ecological principles can be analyzed in miniature in habitats such as vernal pools and isolated peaks.

Some of the adaptations of sensitive species may also be of economic importance. Each species, variety, subspecies, and even individual population of plants has unique genes and chemical combinations found nowhere else. Native plants have provided genetic material for nursery stock, and agricultural stock and there is potential for medicinal uses. Examples include the use of native beach strawberries and western dichondra in producing better domestic varieties, propagation of jojoba and rare

OTAY MESA MINT, *POGOGYNE NUDIUSCULA*, GROWS IN THE VERNAL POOLS ON OTAY MESA, SAN DIEGO COUNTY.

meadow foam species, *Limnanthes*, for production of high grade oils, and the testing of evening primrose as a cardiac treatment and San Diego mesa mint for cancer curing properties. There are numerous examples of rare species in nurseries including *Ceanothus*, wild lilac, *Arctostaphylos*, manzanita, *Fremontodendron mexicanum*, flannel bush, and Torrey and Monterey pines. While only a few rare and endangered species have yet shown economic importance, the potential exists. It would be a shame to allow a species or genetically important population to go extinct only to find later that it has economic or medicinal value.

HUMANISTIC VALUES

Besides the practical reasons for protection of rare species, there are a number of reasons that evolve from human values, understanding of our role on earth, the aesthetics of wild plants, romanticism, and the fact that native species of plants and animals are part of our heritage.

One factor to consider stems from a moralistic point of view. We are generally considered to be the most intelligent on the planet earth. As intelligent beings, we should act as stewards of the land and should not use it unwisely. We should not assume the authority to determine which species die and which species survive, through carelessness or intent. In fact, because of our stewardship role, it can be seen as our responsibility to ensure the continued existence of other organisms or earth. Furthermore, it can be said other species hold inherent rights for existence. In essence, human-induced extinction of species can be considered a breach of man's stewardship role as well as an act that assumes the authority of determining life and death of species without consideration for the species.

From an aesthetic point of view, many of the plant species considered rare and endangered are extreme-

VARIEGATED DUDLEYA, *DUDLEYA VARIEGATA*, GROWS IN CLAY SOIL ALONG THE SOUTHERN CALIFORNIA COAST.

ly beautiful, and contain interesting features. The beauty of the Dunsmuir mariposa, *Calochortus dunii*, or the grandeur of the Santa Lucia fir, *Abie Bracteata*, can be easily appreciated. Unfortunately, some of our really rare plants such as orchid grass, *Orcuttia mucronata* and Turkish rugging, *Chorizanthe orcuttiana*, would not be considered aesthetically pleasing by most people. However, all plants and organisms contain some aesthetic virtues or characteristics worthy of appreciation. Even the smallest and ugliest indigenous plant is part of the dynamic, natural and living world with unique adaptations for its environment. These qualities alone are reason for admiration and endow living organisms with their own type of beauty. Unfortunately, few realize that the natural world contains objects that are at least as beautiful and valuable as man-made works and if they are protected, these objects will last and reproduce in perpetuity.

The fact that sensitive species of plants and animals are rare frequently creates more interest. It gives one a great feeling of accomplishment to find plant species so rare that few other people have seen them, or that few others even know exist. It is a point of view or feeling similar to collecting rare coins, or even keeping a life list of birds.

Lastly, native species are part of our natural heritage. Early settlers in California were familiar with grizzly bears, the California condor, and a great number of organisms in their daily environment, including native plants. Early Spaniards cited having difficulty setting up camps on southern California mesas due to numbers of "visnaga" or coastal barrel cactus, and early San Diego residents mention the strong odor of the vernal pool inhabiting mesa mint. Needless to say, the grizzly bear, the California condor, vernal pools, and the coast barrel cactus have either been greatly reduced in their range or totally exterminated. Nevertheless, they are part of the history and heritage of California to be passed on to future generations.

ORCUTT'S BRODIAEA, *BRODIAEA ORCUTTII*, GROWS BOTH ALONG THE COAST AND IN MOIST AREAS IN THE MOUNTAINS OF SAN DIEGO COUNTY. CHARLES R. ORCUTT WAS AN EARLY SAN DIEGO COUNTY BOTANICAL EXPLORER.

(Continued on page 156.)

ONE GARDENER'S EXPERIENCE WITH SHEET COMPOSTING

by Robert W. Davis

COMPOSTING IS A method devised by man to speed up the production of soil bacteria and develop plant enzymes in soil. These two conditions promote growth that is nearly impervious to the common plant diseases. Soil enzymes and bacteria encourage an immunity supplied by nature. Man, in his impatience to grow a beautiful plant, will spray it with chemicals or dust it with something to forestall mildew or mold. This kills the very things in the soil he needs most, making it susceptible to disease. It also kills the natural predators of insect pests.

No other method of improving your soil is simpler than the procedure known as sheet composting. All that is needed are old, dried up leaves that can be sacked in plastic to keep them dry until needed, and most importantly, a bag of cow manure. Select the area you intend to work. If it is already planted, dampen the ground about 4 inches deep around each plant. Do this a day or so before composting to make the soil mealy and easy to break up. When it can be worked, spread a layer of leaves about an inch thick, perhaps a foot from the plant stem or tree trunk. Small leaves are easier to use around small plants such as roses. My leaf stockpile comes from a Brazilian pepper tree that is both obliging and generous. If you have an elm, or other deciduous tree, or a friend does, take your sack along the next time you go to call. Avoid eucalyptus leaves, but everything else is fair game.

On top of the leaves, loosely spread by hand (or use a small carton, as from cottage cheese) a layer of powdered cow manure an inch or so thick. Mix this into the top 4 inches of soil with a short handled cultivator. The one I use is made of heavy wire bent into a three-tined claw, which is fitted into a wooden handle. It is lightweight and perfect for the job. The whole idea is to mix leaves and manure into the dirt which is then watered with a sprayer to dampen the top 4 or 5 inches of soil. Do not disturb this soil for a day or two. When the ground becomes workable, use the cultivator to fluff up the soil so air can get down into the mixture. Don't be afraid that your plants will burn. It is raw manure, but in this method, any heat will be dissipated into the air. What little heat remains encourages the growth of soil bacteria which will then feed on the leaves and manure. In a week or less, add a half inch of manure, digging it with your cultivator down about 3 inches. Water just enough to dampen down the new manure. Wait another day or two and fluff up the soil again.

In about two or three weeks you will have created a spongy, rich looking dirt that will hold water and keep plant roots cool and healthy. Be careful not to cultivate too deeply; it might disturb new roots. And do not overwater.

This whole program has been undertaken to supply a friendly, healthy environment for soil bacteria. Once they are well established, earthworms will follow, aerating the soil and adding their own waste to increase soil nutrients. You may still want to add fertilizer, using a little less each time, but more often. Try a slow-release non-burning organic fertilizer. It costs a little more, but you do not need to use very much for each feeding.

Several years ago I planted a hibiscus in the wrong place (not enough sunshine). It grew tall and slender trying to peek over the wall, and it was covered with aphids. In those days I did not know much about Nature's way, so I sprayed. At some point I tried the leaves and manure routine—not for the aphids, but because the soil below the hibiscus did not retain moisture very well. To my surprise, the aphids disappeared. Of course, I thought my thorough spraying was responsible. A year or so later, the aphids were back. Meanwhile I had read several books on compost bins and decided this would be a perfect time to test the sheet compost method. I followed the same routine described here. In about a week, the aphids were gone—every last one of them! All I could find were a few black ants wandering around in search of their aphid herd.

Another practical result of this program: I have not bought or used spray in a long time. My tank even rusted so I discarded that along with some old spray chemicals.

THE VERSATILE SUNFLOWER

by Rosalie Garcia

SUNFLOWER DRAWING FROM A PACIFIC HORTICULTURAL FOUNDATION ENVELOPE MAILER USED IN 1976 PROMOTING *PACIFIC HORTICULTURE* MAGAZINE WHEN IT BECAME THE SUCCESSOR TO *CALIFORNIA HORTICULTURAL JOURNAL*.

THE SUNFLOWER IS our biggest daisy. *Helianthus annuus*, a member of the family of composites, Compositae, may have flowers 9 to 18 inches in diameter and 9 to 18 feet tall. There are several other varieties of these cultivated annuals ranging from a 15 inch high many-branched plant with 2 inch flowers to one that is 4 feet tall and has 4-inch flowers or heads as they are commonly called. The sunflower is a compound flower, so each head is actually several dozen simple blossoms growing together on a disk, each producing a seed. The tuberous member of the family, Jerusalem artichoke, *H. tuberosus*, often called sunchokes in our markets is a gourmet food, often pickled, or eaten raw and sliced in salads, producing a crunchy texture and nutlike flavor.

Native to the New World, sunflowers were recognized and grown by the Indians long before the settlers arrived in the United States and found them growing on the Great Plains of the mid-west. Although the sunflower is a native American plant, it is more appreciated in Europe and Asia where it has been adopted and grown more extensively than in the United States.

In Europe the olive was the main source of oil, but it took years for an olive tree to mature and it grew only in Italy, Spain, and along the Mediterranean. Along came the sunflower, with oil, forage, and seeds for real nourishment. It was a plant that matured quickly, and was so easy to grow, harvest, and store, that millions of people in those continents recognized its worth and made it a staple in their diet. Its seeds are a staple food in many less developed countries and are the source of thriving businesses in all developed areas.

In the last 50 years the sunflower has become appreciated in the United States. Sunflower seeds are eaten, raw or roasted, as "munchies." Just keep the seeds in the bird feeder, and watch the birds flock in for a feast. Weight watchers should go easy on freshly hulled seeds; they contain 30 percent oil. A handful of seeds, which also contain 22 percent protein and many of the important vitamins, and an apple are a meal and should not be considered just a snack.

The seeds may be ground into a flour and mixed with other flours for baking. One bakery I know of makes a whole grain bread containing chopped seeds with whole seeds sprinkled on the top and bottom of the loaf. It is delicious toasted. The oil, mixed with butter or other more solid fat, is used in baking also.

Those trying to gain weight (there are such people) find a spoonful of sunflower oil a day helps, but they might do better to put the pure oil on salads and have more fun. Sunflower oil keeps better than many other oils for it lacks the fatty acids that turns others rancid. It tastes "lighter" and is excellent for frying, since it does not smoke at the normal frying temperature. It has a higher flash point than most other oils. (I never use any

other oil.) One can quickly detect restaurant "fries" that are cooked in sunflower oil (many are not), because there is not that horrible suffocating smoke or odor of smoking fat. Even in the South, the home of fried foods, one finds increasing use of the gentle oil. It is becoming more and more a commercial crop there, going in on cotton land.

None of the plant is wasted commercially. The yellow petals may be crushed to make a yellow dye. Dried leaves have even been rolled for use in pipes and cigarettes. Whole dried seeds have been used as a coffee substitute. The stalks when treated like flax make a silky fiber. An excellent honey is made by bees kept near sunflowers. Cosmetics manufacturers have found uses for it, for the oil is light and penetrating. Children have been caught drinking it from the bottle. The flavor is light and pleasant.

Sunflowers can be grown anywhere corn is grown. Since the two thrive in the same kind of soil, they are often grown together. The sunflower bears better when given the same treatment, but it will tolerate more frost and will survive with less moisture and fertilizer. Many farmers consider sunflowers as feed crops for hogs and livestock, using the entire stalk.

Can the ordinary gardener raise the gigantic ones for the seeds? Yes, if he plants them all around the edge of the garden, in an ordinary city lot, staking them against the wall or to a fence. He can get in at least 100 plants that way and they should net about ten pounds of seeds—if he ties cheese cloth over the heads when they begin to mature to protect them from the birds. The neighbors may wonder what is going on, but no creature appreciates the seeds more than birds, especially the migratory ones.

At maturity, the heads begin to droop, turning brown on the backside. They may be cut off at this stage, leaving a 10 inch stem. Lay them on a wire netting in full sun, or hang, heads down, covered with wire netting until dried. Now the seeds can be scraped or scratched out with a wire brush.

The seeds should only be husked out in small quantities as needed, so as not to lose the vitamins. Crack the seeds in a small hammer mill or set a nutcracker at its smallest size and crack several at a time, setting the seeds sidewise. Put the cracked seeds into a wide tub of water (an old baby bath tub is about the right size), where the chaff will rise to the top and the seeds to the bottom. Pour off the chaff and spread out the seeds to dry. This will be a slow process. Kids do it with their teeth, chewing hull and seed and spitting out the hulls when they have a mouthful. That is the best way to get the true, sweet flavor of the nuts.

The easy way to have hulled nuts is to buy a bag of the nuts at the grocery store, but they will have lost some of their flavor. To capture the fun and all the flavor, try growing your own.

"Always there is nothing like growing your own."

FALL ARRANGEMENT

by BARBARA JONES

EVEN COMMON ROADSIDE WEEDS ARE BEAUTIFUL WHEN A SIMPLE ARRANGEMENT IS MADE WITH A SMALL NUMBER OF ONE KIND IN AN ATTRACTIVE CONTAINER.

SAN DIEGO NATURAL HISTORY MUSEUM. THIS, THE FIRST PERMANENT HOME OF THE MUSEUM, WAS OFFICIALLY OPENED in 1933.

SAN DIEGO'S DISTINCTIVE HERBARIUM

by Allethe Macdonald

WEBSTER DEFINES HERBARIUM AS A COLLECTION OF DRIED PLANTS SYSTEMATICALLY ARRANGED FOR REFERENCE. HOURS, DAYS, MONTHS, YEARS OF LOVING CARE BY MANY INDIVIDUALS ARE REQUIRED BEFORE TRAYS OF DRIED PLANT MATERIAL BECOMES A HERBARIUM.

THE HERBARIUM IN the Botany Department of the San Diego Natural History Museum has one of the finest collections anywhere, both native and cultivated, of plants from San Diego County and Baja California (Mexico)with emphasis on specimens from the northwest section, the central mountains, and the offshore islands of Baja. There are 111,500 separate specimens in this collection which is the chief resource of its kind for all educational institutions in this region as well as for scientific researchers throughout the United States and several foreign countries.

The chief functions of the Botany Department are to maintain and improve the herbarium and other references, to disseminate botanical information, and to add new botanical knowledge. Specimens are regularly loaned to researchers at institutions throughout the United States, as well as in Mexico, Germany, and England. An active plant exchange program with other herbariums provides a valuable service to other institutions as well as adding new specimens to the museum's collection.

The nucleus of this outstanding herbarium was started in the early 1920's by the donation of a valuable collection of about 2000 specimens of San Diego County flora; some were from Baja California. This collection was made by Daniel Cleveland, a pioneer San Diego botanist and a charter member of the San Diego Society of Natural History, in 1874.

During the 1930's, Frank F. Gander, curator, and his assistant Ethel Baily Higgins, who later became the

curator, mounted and accessioned all the specimens in the herbarium. Mr. Gander in traveling to county schools systematically collected plants throughout the county. Mrs. Higgins was an active collector and explorer until she stepped down to become an assistant again at the age of 90. By this time the herbarium collection had grown from approximately 2000 to 50,000 specimens.

Another period of tremendous growth for the herbarium was under the direction of Dr. Reid Moran from 1957 until his retirement in 1982. He did extensive field work in Baja California. From this research and his other botanical interests he produced over 170 publications while he was at the museum.

Publications by other members of the Botany Department have also contributed invaluable information on the flora of the southwestern region of the United States and of Baja California. Ethel Bailey Higgins was the author of two of the major publications: *Annotated Distributional List of the Ferns and Flowering Plants of San Diego County, California*, 1949; *Type Localities of Vascular Plants in San Diego County, California*, 1959; Helen Witham wrote *Ferns of San Diego County*, 1971, and in 1982 *The Grasses of Baja California* was published by Moran & Gould.

Members of the Botany Department who have made valuable contributions to *California Garden* magazine since the 1920's are: Fidella G. Woodcock, Frank F. Gander, Ethel Bailey Higgins, and Dr. Reid Moran. Not only the curators but other staff members of the museum have contributed informative articles. Many readers of the magazine looked forward to the articles by Helen Chamlee (Witham) from 1965 until her death in 1982.

While the herbarium is used primarily by the museum staff, it is also utilized by governmental agencies such as the California Department of Parks and Recreation, Caltrans, and the United States Forest Service, and by others in the field of botanical research. Another service provided by the Botany Department is plant identification for the public. Plants to be identified can be mailed or brought in personally, although it is necessary to telephone in advance. Specimens should be in good condition and large enough to include a stem with leaves and flowers (if available) and any other characteristic features of the plant.

We are confident that the Botany Department will continue to make strides toward botanical excellence under the guidance of Dr. Geoffrey Levin.

GARDEN COURSES OFFERED

The third in a series of four garden courses will be held in the Garden Center, San Diego Floral Association, Casa del Prado, Balboa Park from 9:00 a.m. to 4:00 p.m. on consecutive Saturdays, October 20th and October 27th, 1984.

The San Diego Floral Association and the Palomar District, California Garden Clubs, Inc., are sponsoring these courses which have been developed by the National Council of State Garden Clubs, Inc. Successful completion of courses will permit participants to serve as Nationally Accredited Gardening Consultants.

Students enrolling for the first time may make up previous courses as they are offered in localities adjacent to San Diego. Those not interested in consultant status may take the courses without examinations.

For further information please call one of the following: Penny Bunker (232-5782), Martha Rosenberg (295-1537), or Don Boyer (442-4242).

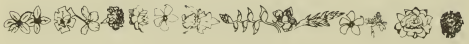
Hear Ye... Hear Ye!

COME TO **YOUR** *MEETING*
San Diego Floral Association
Casa del Prado, Majorca Room, Balboa Park
Tuesday, October 16, 6:30 p.m.

- **SPAGHETTI DINNER** **$2.50**
  with dinner music!
- **Program: CHARLES COBURN**
  HORTICULTURIST
  SAN DIEGO ZOO
- **AUCTION**
  Auctioneer: DR. LEE FELPS
  Cactus — Bromeliads — Bonsai — Orchids
  Protea — Containers — and much more!

BRING A FRIEND !

Reservations: BY OCTOBER 10TH ! !
Make check to: San Diego Floral Association
Mail to: Mrs. Elinor Nelson
5227 Castle Hills Dr.
San Diego, CA 92109



Congratulations!

California Garden's 75th Anniversary

and to the leadership of
those who made it possible.

GENEVIEVE McALLISTER

MEET DR. GEOFFREY LEVIN

Text & Photo by Bill Gunther

DR. GEOFFREY LEVIN, the new botanist at the San Diego Natural History Museum, is in formal language, Chairman of the Botany Department and Curator of the Herbarium. The position which Dr. Geoffrey Levin newly occupies is no run-of-the-mill job. In the evaluation of professionals, Dr. Levin's position at the museum is one of the most desirable for a botanist to have. We congratulate Dr. Levin for having been chosen above all the other applicants for this position, and we welcome him to San Diego, one of the most botanically-minded cities in the world.

One of Dr. Levin's favorite plant genera happens to be *Dudleya*. San Diego County is the central habitat of species of *Dudleya* in the wild. He also is very interested in the Euphorbiaceae, or spurge family, and San Diego is the world's center for the horticultural development and propagation of *Euphorbia pulcherrima*, the poinsettia, which is the best known of the 7300 species in that big plant family.

Will Geoffrey Levin spend all his time up in the isolation of the closed-to-the-public herbarium of the San Diego Natural History Museum? The answer, very emphatically, is no! Geoffrey loves hiking, back-packing, and camping; he is ready and willing to lead interested groups on field trips to see the dudleyas and other native plants of this area.

The San Diego Natural History Museum deserves our sincere thanks for bringing in Dr. Geoffrey Levin to enrich the scientific leadership of this community. One way to individually respond is to join the San Diego Natural History Museum and actively participate in its projects and activities. While filling out your membership form at the museum mention to the person who is serving you, that you are particularly interested in botany. That person will contact the Botany Department, and if Dr. Levin is in at the time, he will come to the membership desk to meet you personally, to welcome you as a new member, and to invite you to volunteer your help in whichever of the museum's many botanical projects happens to most interest you.

(Editor's note: We are pleased to welcome **Dr. Geoffrey Levin**, as Consulting Editor, to the staff of *California Garden* magazine.

Harvest and Renewal

ROSEMARY FOR MEMORY • ROSES, LOVE • RUE, VISION
SAGE FOR HEALTH • VIOLETS, HUMILITY • LAVENDER, LUCK
THYME IS FOR COURAGE • IVY A SYMBOL FOR GOD
MINT FOR CHEERFULNESS • CAMOMILE FOR PATIENCE

by Josephine Gray

REPRINT FROM *CALIFORNIA GARDEN*
OCT–NOV 1970

IF AN HERB BOOK has been written by a purely Western gardener, it has not come to my notice. The books on herbs over which I endlessly pour over are all by Eastern or British gardeners, and I find that we Westerners have problems and rewards which they do not have. We fight clay and granite soils and bone dry summers, but we do not have to plant our Rosemarys and Lemon Verbenas in tubs to be brought into shelter for the winter.

Rosemary is green and beautiful all year and gives us several glorious blossomings. It needs no drastic pruning at all.

Lemon Verbena must be pruned in the fall shortly after the last harvest. I always have a heart-scald after performing this rite, for it looks so naked and lorn that I think I have surely "done **it** in" this time. However, in late February or early March little green eyes begin opening all along the gray branches. I have just read in a British book that spring is the time to prune Lemon Verbena. Though my fall pruning has been successful because our springtime comes early, I shall experiment with one shrub this year.

October is the last call for cutting Lemon Verbena to dry for sweet-bags and sachets to tuck into the box with a pretty Christmas nightgown. There isn't a more pleasant task on earth than to sit in the shade and strip the fragrant leaves; this is when the mind reviews summer and makes plans for the coming year.

Now, too, you must gently prune the rose geranium for drying. I dry them and the herbs on old window screens in the shade, so that the air can get to them all around. They must be stirred every day, and if they are dried out-of-doors, must be taken in at night to avoid moisture. Some herbs are dry within a week, but the geranium leaves take much longer. Basil and thyme may be cut for the last vinegar making of the year. It is well to dry a little basil, too, for you will not have it in winter as you will other cooking herbs. I have read that one can bring a pot of it inside for the winter, but have never had success with it.

It is wise, in every plot to let one plant go to seed, particularly the ones which are hard to come by; Lemon Basil, the gold and silver Lemon Thymes. Of course the thymes can be propagated by layering, but it is fun to scatter some of the seed to see where it will show up after the rains begin. Not so with basil; it must be put in an air tight container in the refrigerator to wait for warm earth and hot days. Cut the brown heads of rue and when you have shaken the hard black little seeds from their cells, save the heads for dried arrangements or herb wreaths.

Southernwood is another perennial which goes completely dormant in the winter and can be pruned now, the branches stripped to dry as a moth deterrent. Here again you will feel that you have "done it in," and if you prune fiercely you may find that you have. This pleasant herb is one of the most attractive of the artemesias, with its delicate fern-like foliage and spicy fragrance. It is very easy to propagate from cuttings taken in spring and summer, and I have had it root in water in a little bouquet on a kitchen window sill. One of its several names is "Lad's Love" because it was used in an ointment to promote the growth of a beard. With rue, it was used in the tussie-mussie which judges carried to court to ward off jail fever, also it is said to be a defense against drowsiness. Little bunches were often carried to church to keep members of the congregation from falling asleep during the long sermons.

I am becoming more and more devoted to the idea that more seeds than we think, like to be sown in the fall. With the exception of basil, that hot weather devotée, and the thymes which want cool weather in which to germinate, I sow sage, borage, summer savory, burnet, marjoram and oregano in October and early November before the rains come. (At the same time that calendula, larkspur, poppies and columbine are sown.)

Twice a year at least, herbs appreciate bone meal scratched and watered into their beds. They also respond

(Continued on page 156.)

Meet Some Old Friends

by Juana Curtis

SOLANUM WENDLANTII
Alfred C. Hottes Collection

ALL TOO OFTEN we are captivated by the exotic new hybrids flooding the market and we become addicted to collecting the latest in new introductions, only to be shocked · occasionally by learning that what we thought was new and exciting is really an old favorite cultivated years before.

In La Jolla, California, some of the old-time gardeners know *Solanum wendlandii* as a gorgeous, fast-growing summer vine with cascading clusters of blue-violet blooms late in July. A rampant grower easily started from cuttings, this Costa Rican nightshade can disguise an unsightly fence in only a few months. Seeing the exquisite inflorescence is enough to make anyone forget the teeny barbs at the leaves.

My own specimen rambles over the front of a lath house. During the summer blooming season a sheer wall of soft green leaves shows off the many 6- to 8-inch clusters of blue flowers, when so many specimen plants have already finished blooming. What a breath of freshness to have this in the summer garden.

Another beloved and almost lost treasure was re-discovered by a friend of mine. This was a geranium that had been grown in the Mission Hills area of San Diego, California, some 50 years ago. When I shared it a few years ago with members of the *San Diego Geranium Society* it was a cultivar unknown to them. They were enthusiastic about its delicate pink blossoms, daintily hemstitched in deep rose-red. Its ivy-shaped leaves are ovate and a little heart-shaped too. Finally it was identified as 'Princess Victoria' and it has since become a sensation.

Grow this princess in a basket, and with a little filtered sun it will reward you with thick, glossy leaves and pendant blooms too lovely to describe. Protect it from hot afternoon sun and do not over-water.

A third old-timer, *Ampelopsis brevipedunculata*, is a wild and rangy vine grown by the late Alice M. Clark, an old-timer in San Diego gardening circles. It is a deciduous vine with twining tendrils, grape-like leaves, and small inconspicuous flowers. It saves its best for the last, developing small bunches of tiny grape-like berries that turn from greenish ivory to brilliant metallic blue in late summer and fall. So finely painted by mother nature, no wonder it has earned the name of porcelain vine.

New friends are fun, but do remember to include in your garden an occasional old friend. □

50 YEARS AGO...

Carol Greentree

THIS INFORMATION IS AS APPLICABLE TODAY AS IT WAS 50 YEARS AGO. ONLY THE WRITING STYLE HAS CHANGED.

GARDEN COLOR, by John Gibbs Adams (September, 1934)

To us fortunate ones of southern California, the choicest opportunity—and one that we have neglected the most blamably—is that of making our gardens gay and colorful *every* day in the year. . . .And if we put our hearts to that, then and then only, will come true the fibs that have so long gone out to the world in railroad folders and chamber of commerce phamphlets, that "Southern California blossoms in January as in June." It never has done so yet; but you and I can *make* it do so.

Any incompetent can make a garden beautiful in Spring, Nature's color riot does it then, even if the design is poor. But it takes thought and love to do it in mid-winter; so let us get busy and spend a lot of both.

To begin with the background; let us plant the gay Acacias, and hunt out the far finer ones than are generally chosen, as *podalyriaefolia (podalyriifolia)* and *cultriformis*. And the choicer Flowering Eucalypti, and the gorgeous-berried *Pittosporum rhombifolium* of orange, and our native "Holly" (Toyon) of Christmas red, and the earliest types of Chinese Flowering Peach, and the gay cerise *Prunus campanulata*.

In the way of winter shrubs, our very best chance lies in the use of the "Heathers" (Ericas). For they give more bloom, and that over a longer period than any other shrub; and they come in many shades of white, lavender, pink, and red.

I know a wise gardener who says there ought to be a law compelling every home owner in California to plant at least three heathers. . . .

The most winter color for the money lies in the Berry-bearers, as the fine new types of Cotoneasters, particularly the *Parneyi* of splendid Christmas red, and the pure white Snowberries, and the better Pyracanthas of yellow, orange, or red berries, particularly, in red, the showy *Formosana (koidzumii)*.

You Irish will especially appreciate the Pyracanthas, as it is their stalks and root knobs that make the useful shillahahs!. . . .

Winter annuals that will give a riot of color are Pansies, Violas, Calendulas, Primulas, Stocks, and Snapdragons. Of the Cinerarias which seed houses so rampageously advertise as winter bloomers, I have almost never known one grown out of doors to blossom before March! That fib should not be allowed to persist.

Spring as I said, will take care of itself. So will Summer if you remember to include such good standbys as the Day Lilies and cool blue or white Agapanthus, with Fuchsias, Begonias, and Impatiens for shaded areas, and the reliable Oleanders and Hibiscus, and Crepe Myrtles for background.

Fall, though, needs love and thought second only to winter. Of course "everybody" has Chrysanthemums and late Dahlias; but generally it ends right there. Add the beautiful Purple Sages (*Salvia leucophylla*), the several Blue Sages, especially the Pitcher Sage (*S. azurea grandiflora*). . . .for annuals the stately Cosmos, the African Marigolds, the Phloxes, and Mignonettes; for bulbs, the 'Purple King' Iris and Golden Sternbergia; and then you will have a garden as gay as Spring's.

But most important of all; you *must* do your thinking on time. Every season at least a hundred people demand certain flowers of me when they see them around in Blossom. That is generally at least six months too late. Fall, for instance, is the time to plant for Spring; and Spring the time to plant for Fall.

Speaking of Iris reminds me of an experience. A lady client "vamped" me to arrange for a big luncheon party a centerpiece of Iris blossoms from a rich planting I had made for her. A few days later I asked the colored butler if the ladies had liked them. "Why, Mistah Adams, de way the ladies carried on about dem Irishes was sumpin simply scan'lous," he replied.

(Editor's note: The cotoneaster called Parneyi is *Cotoneaster lacteus.*

Salvia azurea var. *grandiflora* is correct for pitcher sage.)

(Continued on page 156.)

THE VIEWING BRIDGE NOW PROVIDES A BEAUTIFUL OVERHEAD VIEW OF MANY OF THE PALMS – BUT WITHIN A FEW YEARS THE PALMS WILL TOWER OVER IT. NOTE THAT THE STAIRCASE WHICH GIVES ACCESS TO THE BOTTOM OF THE CANYON IS NOT DESIGNED TO ACCOMODATE PERSONS WHO ARE HANDICAPPED.

EXPLORE A TROPICAL PALM CANYON

Text and Photos by Bill Gunther

YOU NEED NOT lay out $4000 to travel to eastern Africa to explore a tropical palm canyon, if you live in or plan to visit San Diego, California. Cancel your trip to Mexico. Stay at home and see the world's largest grove of a Mexican palm.

In an out-of-the-way nook of Balboa Park, San Diego, is a beautiful tropical canyon in which are growing mature palms of many more different species than can be seen in any palm canyon in all of Africa. To get to this tropical canyon go toward the Organ Pavilion from the Prado in front of the San Diego Museum of Art. Proceed a short distance until you see a big palm grove on your right and a viewing bridge overlooking palm canyon.

The palm which predominates in the area along the north side of the wooden-viewing walkway is *Butia capitata*, from Brazil. This species is commonly called either butia or jelly palm. It can be easily recognized by the fact that the green color of its leaves is tinted with blue or grey, its stiff pinnate leaves recurve sharply downward near the tips, and the individual leaflets project upward from the midrib of each leaf, forming a 'V' in cross section. This distinctive palm has pulpy fruit, averaging an inch in length; these fruits, as they ripen, turn yellow, sweet, and edible. The ripe fruit makes

A CLOSEUP OF THE CENTRAL PART OF A *BRAHEA BRANDEGEEI* PALM SHOWS THE RELATIVE SLIMNESS OF THE TRUNK, THE LONG LEAF PETIOLES, AND A BLOOMSTALK.

excellent jelly (hence the name jelly palm), but actually, in Brazil, a far larger quantity of fruit is used making wine than for jelly. Butia palms perform well along the coastal strip of southern California, and they are available in one-gallon and five-gallon sizes at several local nurseries. But before buying one for your garden know in advance that although a butia palm is handsome alone and/or with others of its same kind, it has coloring and form stiffness that does not harmonize either with other palm genera or with other types of trees.

Walk down the steps into the canyon. All those tall palms surrounding you constitute the world's largest grove of *Brahea brandegeei*. They are surely the most beautiful and the most graceful of the braheas because they grow taller, with a proportionately slimmer trunk than any other of the dozen species of its genus.

So then just how tall does it grow? The authorities do not agree. McCurrach in *Palms of the World*, 1960, says that it reaches 100 feet or more; *Hortus Third* gives the height as about 40 feet; Blombery & Rodd in *Palms*, 1982, says 10 to 12 meters high, which further shrinks the height. What happened? How could a palm which was over 100 feet in 1960 shrink to almost one-third that height by 1982? Surely, evolution does not work that fast! Look up at these trees in Balboa Park's palm canyon—they are tall. Quite probably, you will agree that they rise much closer to 100 feet than to 30 some feet.

THE *WASHINGTONIA ROBUSTA* WHICH DOMINATES BALBOA PARK'S PALM CANYON ARE SO OLD THAT THEY GRACEFULLY LEAN OVER IN THE STYLE OF COCONUT PALMS. MOST OF THEM LEAN WESTERLY INTO THE PREVAILING WINDS. WE DON'T UNDERSTAND WHY. DO YOU?

MOST OF THE *BRAHEA BRANDEGEEI* PALMS IN BALBOA PARK ARE DOWN IN A SIDE CANYON, BUT THOSE NEAR THE CANYON RIM GRACE THE SKYLINE ALONG THE PERIMETER OF A BIG LAWN AREA.

If this palm is native to Baja California in Mexico, how come the biggest grove is in San Diego? The answer is, "All because of a very energetic woman named Kate Sessions."

At the beginning of this century, Kate Sessions, San Diego's famed horticultural heroine, operated a nursery located on city property within then-undeveloped Balboa Park. For use of this land, her rental contract with the city specified that she would plant a hundred trees or more every year. Most of the old trees in the western part of Balboa Park, including the big grove of *Brahea brandegeei* palms, were planted by her.

Of all the trees which Kate Sessions planted in the San Diego area, her *B. brandegeei* grove is by far the most interesting to botanists, horticulturists, and historians. In 1902 Miss Sessions traveled from San Diego to the southern part of Baja California by boat. (Three references, including the only book about Kate Sessions, incorrectly indicate that the date was 1900 and incorrectly indicate that the trip was by donkey or burro.) She had arranged to meet botanist Townshend Brandegee in Baja, and together they collected seeds and cuttings of plants of that area. Among these plants was the palm which we now know as *Brahea brandegeei*, but they both thought it was a new species of the genus *Washingtonia*. They noted that this palm, in its native habitat, did not grow in groves, but rather as scattered individual specimens, primarily on the northern slopes of mountains. Miss Sessions brought back hundreds of seeds, sprouted them, and planted the seedlings in one big grove here in Balboa Park's palm canyon.

Tallest of the palms in the canyon are the grand old leaning *Washingtonia robusta* which allegedly were planted in person in 1900 by Kate Sessions. Some of the others were planted in preparation for the 1915 Panama-California Exposition which celebrated the grand opening of the Panama Canal. Others were planted to prepare Balboa Park for the 1935-36 California Pacific International Exposition, which is a fond memory for some of us. The remainder of the palms and the wooden viewing bridge date from a major renovation project completed in 1976.

When next you visit Balboa Park in San Diego, be sure to see this beautiful tropical palm canyon.

Author's note: Palm canyon is a public feature of Balboa Park; anyone may visit it without charge at anytime. Because the palms are not yet labeled, it is more interesting to tour it under the expert guidance of a private botanical tour guide. For information about these tours you may contact Balboa Park or the Visitor's Center.

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CABBAGES

by Rosalie Garcia

THE COMMON HEADED cabbage is not a rose, and never will be a rival (certainly not in the area of scent). With some modern public relations promotion, and consideration of its better nature it can take its place on the table as a delectable dish of real class and distinction. And with the emphasis on salad bars, this is increasingly becoming the case. It is edible raw or cooked, full of vitamins and minerals and bulk roughage, so necessary to civilized people with their refined diets. Weight watchers have no better ally. They can feast on a large helping, feel full and satisfied with the smug knowledge that no more than fifty calories have been consumed. Cabbages are amenable to all kinds of sauces and dressings, available in any market at any season from the grubbiest little grocery to the fanciest gourmet shop. Excepting potatoes, what other vegetable is such a staple?

Cabbages appear to have been around almost as long as civilization, and perhaps before. They are traceable back at least four thousand years to the Chinese who were the first to cultivate so many of our fruits and vegetables. The Egyptians and Romans knew cabbages and the Germans took them for their very own. The Germans did not invent sauerkraut, the Chinese did, but they took to it as a nation. The Tartar armies brought it to Europe where it soon caught on. It was food that would keep. All one had to do was to shred the cabbage, layer it with salt which drew the sugar out of the cabbage. Bacteria fermented it, lactic acids formed and produced the tangy flavor. It went well with meats and produced the needed vitamins and minerals that armies on the move needed, and people in cold climates could use when they had no fresh foods. The over-indulgent Romans learned that the lactic acid in the sauerkraut cleansed the intestinal tract and they could recover more quickly after the gourmandizing feasts if they filled up on sauerkraut the next day. In modern times sauerkraut juice is a well-known chaser, and fine for a hangover. (Filling up on raw cabbage or kraut is better than a purge for many.)

It is even stylish now to find a layer of sauerkraut in meat sandwiches or a side serving on a plate, a bowl at a cocktail party. Try that and see how many go for it! Even the old Jiggs dish of corned beef and cabbage is on the menus of the best restaurants and is popular with the gourmets.

The headed cabbage and sauerkraut came to us from Europe with our first immigrants and were staple foods for pioneer Americans in all parts of the country. They were so common that when affluence brought its great variety of foods, people almost forgot beans and cabbages, and only in recent years has it been rediscovered and appreciated.

The headed varieties are what we think of as cabbages, but there are many others that belong to the genus *Brassica*, and they all belong to the mustard family. There are early, midseason, and late varieties, round, oblong, big, and little heads. Most of these are smooth leafed, but there is a delightful crinkled-leaf savoy that comes in the spring and early summer. It cooks in a few minutes, and is fine raw, when shredded. The handsome red head with its opalescent purple outer leaves is as decorative in a flower bed as a clump of pansies. It is edible only when young and tender; with age it becomes tough.

Semi-headed or stemmed cabbages, even sometimes called celery or Chinese, are delicate, crisp, spicy, and delectable when raw. They cook quickly, but are sometimes watery and need a rich or spicy seasoning to make them interesting.

Cabbage will grow in any of the temperate climates, but it has a liking for cool temperatures and plenty of water. They respond to good garden soil of equal mixture of loam, sand, and humus. The coldest part of the garden,

if it is sunny, is the best place for cabbage. Plants may be bought at the nursery and most people do, but to get the more delicate and flavorful cabbage grow them from seed. Local nurseries carry a good selection of seed, but if they do not have the less common varieties, order them from reputable seed companies. Seed growers in California have the most that are adapted to our climates here in southern California. Many of the types that are too delicate for commerce are much better to eat. Different varieties may take from 50 to 90 or even 100 days to

CRINKLY CABBAGE 'SAVOY ACE'

mature from the time the plants are set out in the garden.

Plant seeds in a flat and keep in a warm place. Since I have moved into a mobile home, I plant three to six seeds in a pot and a few weeks later I plant a few more. One time my cat ate all my seedlings when they were only ½ inch high, so keep the seed flat out of the reach of animals. Cabbage seeds usually take two to three weeks to germinate. Set out the plants when they are 4 to 5 inches tall. I have observed that commercial growers set them out when they are only 3 inches high. Set plants 12 to 18 inches apart, water thoroughly, and put a cap over them. This is important to give them warmth, shade, and keep snails from feasting on those succulent seedlings. Leave the caps on for at least a week, but if the nights are cold, leave them on for a month. If 3-inch plants have been set out, leave the caps on until the plants are at least 5 inches tall.

Cabbage like most vegetables is shallow rooted. Keep a mulch around the plants so little cultivation is needed and more moisture is retained. Plenty of water and regular feeding is all they need. Use a well-balanced fertilizer that is higher in nitrogen. To produce a crisp succulent head of cabbage, keep it growing fast from the time it is set out. Do not let it dry out between waterings or the leaves will be tough and tasteless.

Worms are the worst pest for cabbage. They will insinuate themselves into the hearts of the heads. Watch for them and pick them off, and use a non-toxic vegetable dust or spray.

Grow your own cabbages and enjoy the most succulent, easily grown, and versatile vegetable that nearly all of us can enjoy.

BELOW ARE SOME of the varieties for home gardens that are listed in two well-known seed catalogs; one in California, and one in the South. Maturity days are from the time seedlings are set out in the garden.

'Earliana' – One of the earliest, maturing in 60 days; has small round heads, weighs about two pounds, and takes less space to grow.

'Emerald Cross' – Combines earliness, good flavor, and vigor to produce larger, 4 to 6 pounds heads; matures in 63 days.

'Stonehead' – A compact plant that matures in 70 days, has very firm solid interior, and is excellent for home gardens.

'Green Parade' – A compact globe-shaped head; inner leaves almost ribless; holds well in the garden without bursting; and matures in 75 days.

'Ruby Ball' – A dark red cabbage that matures in 68 days.

'Savoy Ace' – A finely crinkled-leaved cabbage that is both heat and frost resistant; has deep heads; and is unusually good for home gardens.

'Tetra' – A conical-headed, crisp and sweet, green cabbage, that is considered to be superior to the old 'Jersey Wakefield' and matures in 55 days.

'Precko' – A fast heading and brightly colored red cabbage that matures in 70 days.

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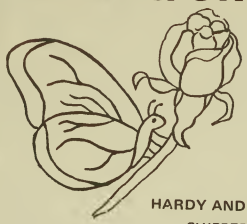

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RARE PLANTS AND THEIR VALUE

(Continued from page 139.)

Fortunately, elected governmental representatives enacted environmental laws recognizing the value of rare and endangered species and sensitive habitats. However, these laws, the Endangered Species Act, the California Native Plant Protection Act and California Environmental Quality Act, have only limited protection capabilities involving specific actions by the Federal, State and local agencies and private developers. Currently no law prohibits the destruction of rare and endangered species of plants on private land. Even so, there are continuing efforts by land developers and property rights groups to weaken these acts, and avoid implementing them. There is a continuing need for public awareness of the value of rare plants and animal species. Until there is a common human understanding of the value of the natural world, species will go extinct as a result of human actions.

Author's note: All the plants are rare species that are shown in the photographs.

Thomas A. Oberbauer has a MS degree in Plant Ecology and is active in the California Native Plant Society. He is employed by the San Diego County Planning Department.

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HARVEST & RENEWAL

(Continued from page 146)

to occasional cultivating with one of those little arrowhead hoes. The salts and minerals in our water pack and harden the soil, and gentle cultivation allows air and water to get to the roots. October is a busy month for California gardeners. Beds must be renovated with humus and bone meal to receive bulbs. (An article in a garden magazine tells me to add, also, a little potash to the bulb beds, maintaining that old bulbs on the downward path will be renewed and that their blossoms will be as big and beautiful as the first year bloom.) There may also be a harvest of herbs or at least a gentle pruning for them and the scented geraniums which you may want to dry with an eye toward Christmas. There are seeds to gather and to sow in the pleasant October mornings. What gardener can keep his mind from leaping ahead to spring as he scratches and digs and prunes and sows? As he stands up to stretch and lean on his hoe, hands fragrant with the scents of thyme and marjoram, he can think of a truth, that these are surely thanks-giving months.

Josephine Gray (†) did her gardening in Rancho Santa Fe, California. She hated to "thin-out" so her garden was a delight. Her hobby was researching and growing herbs.

50 YEARS AGO

(Continued from page 148.)

New Planting About Floral Association Building (Oct. '34)

The planting about the home of the San Diego Floral Association will be commenced October 29 and completed by November 1st, and by June it will be in good condition for the Exposition opening.

Mr. John Morley is furnishing an established boxed *Kentia Forsterana (Howea forsterana)* palm for the south lawn section and several varieties of new and low-growing Cotoneasters and *Raphiolepis ovata (R. umbellata* forma *ovata)* as a trim for the front steps. Also two of the rare *Eugenia Natalitia* from South Africa which bears clear blue fruits. *Eugenia uniflora* will be planted at the base of the front wall and a good sized Dracaena for the southwest corner.

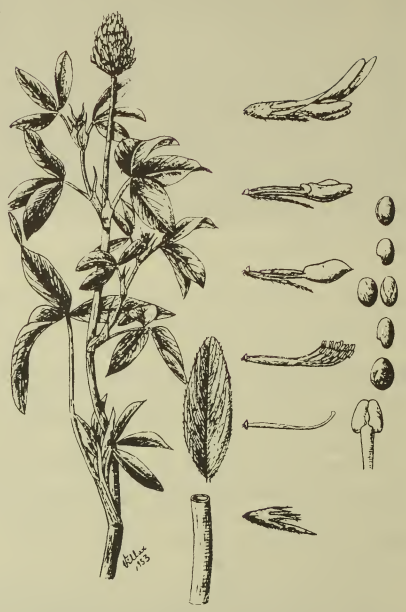
Mr. and Mrs. Hermanse have donated a good plant of *Tecoma Veluntina (T. stans* var. *veluntina)*, an everblooming yellow shrub from Guatemala. Mr. H.O. Ketner, now a member of an Association from San Francisco, sends two bales of the German peat moss, in order that the lawn shall be the best in the park.

Miss K.O. Sessions is furnishing two 'Crimson Lake' bougainvilleas, some prostrate-growing Junipers, yellow hibiscus, and two *Nandina Domestica*.

[Ed. The building that was the home of the San Diego Floral Association until 1971 is now the House of Nations.]

GROW YOUR OWN NITROGEN

by Walter L. Graves



FOR THE PAST 30 years large quantities of inexpensive nitrogen fertilizer have been produced from natural gas. Since the oil embargo in 1973, the sudden increase in the cost of oil has stimulated interest in the nitrogen-fixing ability of leguminous plants. One need only look at the high price of nitrogen fertilizer to realize the value of any substitute that does not require the energy equivalent of 20 gallons of gasoline to manufacture 100 pounds of fertilizer.

The common bean, pea, alfalfa, and several clovers (legumes) live in a symbiotic association with bacteria of the *Rhizobium* group. The Rhizobium live in nodules on roots of leguminous plants and fix nitrogen (change atmospheric nitrogen into nitrogen compounds) so the plant can then use it as a nutrient for its own growth. The vegatative growth from these plants can in turn be used to provide nitrogen (green manure) for growth of other plants.

Use of legumes as a ground cover in home gardens is by no means a new practice. But the use of an Egyptian clover berseem, *Trifolium alerandrium*, is a relatively new crop in southern California. Walter L. Graves and E. J. Hauser, of the San Diego County Cooperative Extension of the University of California, have recently released a paper entitled "Produce Your Own Green Manure Nitrogen with Berseem in Community Gardens."

They explain that berseem, an upright growing winter clover, will regenerate its growth from the crown of the plant, thus allowing it to be cut several times during the growing season. It produces white flowers on heads borne at the ends of the stems (note drawing). While it was introduced into California in 1896, it never seemed to catch the interest of growers. Graves and Hauser, having worked with the plant in the Middle East, decided that because of its large nitrogen-fixing ability it should have another chance.

It was thought that its lack of winter cold tolerance and the absence of the right strain of *Rhizobium* might be the cause of poor growth of berseem. So exploration of these factors was begun in Tunisia, North Africa, with the help of Dr. Joe Burton from the University of Hawaii. Plots of superior strains of *Rhizobium* and a Tunisian commercial clone of berseem, were planted by interested gardeners in the San Diego County 4-H community gardening program. Results of these trials in 1981 and 1982 showed that 2.4 pounds of nitrogen could be produced on a 10- by 20-foot plot or the equal of two and one-half times the amount of nitrogen required for good growth of a vegetable on this size plot.

• Some Cultural Suggestions for Home Gardens

For a plot 10 by 20 feet in size, prepare a weed-free friable soil and work in a minimum of three pounds of bone meal or super phosphate. Sow one ounce of berseem seeds freshly coated with Rhizobium, cover lightly, water immediately, and maintain soil moisture by irrigation if winter rains are not regular.

Cut the stems down to two or three inches above the ground as soon as the top growth reaches 16 inches in height. The cuttings are then available to turn under as fresh green manure or they can be used as a high-nitrogen source in a compost.

The whole process of producing a legume as a natural fertilizer and a green manure may be more

ED EDWARD'S PLOT
SAN LUIS REY COMMUNITY GARDEN (CALIFORNIA)

effort than buying fertilizer by the bag, but the results can be very satisfying and will cost considerably less.

Editor's note: It is not the policy of *California Garden* magazine to include names and addresses of suppliers. There is only one source in the USA, therefore this is an exception.

Uninoculated seed may be obtained from the Desert Seed Company, P. O. Box 181, El Centro, CA 92244; special berseem inoculum (Rhizobium) may be obtained from Nitragin Company, 3101 W. Custer Ave., Milwaukee, WI 53209.

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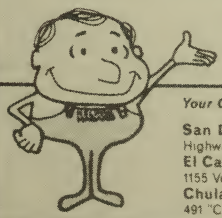

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BLOC HAZARD BRIC

Book Reviews

Reviewed by Sharon Siegan

All these books are in the horticulture library, San Diego Floral Association.

The Complete Shade Gardener, George Schenk, Houghton Mifflin Co., Boston, 1984. $24.95. 2 Park St., Boston, MA 02108.

This is a delightful book of essays on shade gardening, coupled with an extensive compendium of shade plants grouped under trees, shrubs, groundcovers and vines, ferns, perennials, annuals and edibles. The essays begin with the premise that the gardener wishes to create a series of outdoor rooms in which to relax and enjoy nature. It proceeds to explore, whimsically and joyously, the development of a richly patterned leaf carpet underlying graceful arboreal structures defining garden space.

The plant listings are particularly useful in that each entry is coded for appropriate sections of the country, along with a flagging for "troublemakers." His descriptions of growth habits and cultural needs are excellent. His personal comments add color but reflect the eastern bias of his own taste preferences.

Fanny Osborne's Flower Paintings by Jeanne H. Goulding, Heinemann Publishers, Auckland, New Zealand, 1983. 4 Front St., Exeter, NH 03833. Cnr College Rd. & Kilham Ave., Auckland 9, New Zealand.

After rearing thirteen children on New Zealand's barrier reef, Fanny Osborne, in the early 1900's, settled down to painting watercolor portraits of these native plants. She produced many a collection, each individually painted from a fresh specimen, and botanically correct.

The book consists of a collection of 48 of these delicately colored plates, reproduced in original size. They are preceded by a short family history and conclude with some details on the plants themselves.

Ceropegia, Brachystelma and Riocreuxia in South Africa by R. Allen Dyer. A.A. Balkem, P.O. Box 1675 3000 BR, Rotterdam, Netherlands, 1983. $35.00.

For the uninitiated, the title refers to succulents of the Asclepiadaceae or milkweed family. Those described are stapeliadlike in form and scent (aroma of carrion). For those wishing to identify any of these South African varieties, this book, with its wealth of illustrations and color drawings, will allow you to do so with confidence.

How To Grow Fuchsias, Brian and Valerie Proudley, Blandford Press, U.K.: distributed by Sterling Publishers Co., 2 Park Ave., New York, NY 10016, 1983. $3.95 paperback.

This slim volume carefully details cultivation and propagation of fuchsias in a way that makes it particularly useful for the serious grower contemplating large scale plantings. Included is a pest control chart showing treatment products.

The Weed Herbal, Audrey Wynne Hatfield, Sterling Pub., 2 Park Ave., New York, NY 10016, 1983. $5.95 paperback.

The Weed Herbal is a delightful British import, filled with refreshingly useful information about all too common "wildlings" and no longer wanted garden introductions. One such tidbit: "Violet exhalations numb the nerves that control the sense of smell in human beings."

In addition to Hatfield's observations on select weeds as insecticides, companion plants, and dietary supplements, she covers some twenty-five garden invaders in depth, offering recipes for their use, along with eradication hints for those who do not choose co-existence. Fascinating.

GARDENS OF FRANCE, Anita Pereire and Gabrielle van Zuylen, Harmony Books, New York, 1983. $40.00.

Topiaraies—zoological, architectural, and whimsical—abound in the *Gardens of France*. And well they should, for many of the spectacular private gardens covered trace their heritage to the French Court. Originally designed by noted landscape architects (e.g. LeNotre), their manicured lawns and artful topiaries were maintained by armies of gardeners. Some still are; these are the great gardens that have weathered the centuries or been restored to simulate past glory. A few have afforded new owners the opportunity to dare something different—to incorporate a more naturalistic look in the otherwise geometric configurations.

Both authors are proud owners of an estate garden numbering among the thirty-two included. There is also one garden—now open to the public—that of famed impressionist Monet, whose garden was the source of so many of his paintings, particularly water lilies.

This book is lavishly illustrated, packed with French history and garden information, and a joy to read. It is a perfect coffee table edition.

(Continued on next page.)

GARDEN DESIGN ILLUSTRATED, John A. and Carol L. Grant, Timber Press, P.O. Box 1631, Beaverton, Oregon 97075, 1983. $19.95 (paperback).

First published in 1954, this revised edition is (or should be) a classic. By carefully explaining, and applying the principles of design to landscaping, this book offers guidance to why gardens go wrong, and how they may be improved. Ultimately it rests upon the gardener to become horticulturally knowledgeable so that the proper plantings may be selected. The Grants believe this is more than knowing the cultural requirements of each plant, important as that is. They recommend studying the ecology of plants—how they grow together in nature—what space they ultimately require, their growth habit, shape, scale (of plant to site and leaves to plant), texture, leaf value, along with many other design elements. Great observation and analysis is demanded from the reader. But for those willing to devote the time and effort, this book should be most rewarding. My only complaint is that the numerous photographs would be more effective in color.

ORCHIDS OF NIGERIA, L.B. Segerback, A.A. Balkema, Rotterdam, Netherlands, 1983. $37.50.

This well illustrated, well indexed, scholarly monograph on Nigerian orchids would constitute a most useful reference to anyone contemplating an orchid collecting trip in Nigeria.

THEME GARDENS, Barbara Damrosch, Workman Publishing, New York, New York, 1982. $10.95 (paperback). (1 West 39th St., New York, NY 10018)

This is landscape gardening with a twist. As the cover promises, Damrosch describes "how to plan, plant and grow 16 gloriously different gardens." The themes include such captivating titles as: fragrance, butterfly, zen, gray, Shakespeare, hummingbird, winter, victorian and children's garden. There is also a garden of love and one of old roses. Perhaps the most imaginative is the white-flowered "moon garden," enchantingly illustrated—as are the others.

All of the gardens are cleverly conceived, with charming color plans of the design and a list of plantings with appropriate substitutions for different parts of the country. Some even show how the gardens will look at different seasons—or times of the day.

If you are landscaping your garden or planning on redoing just a corner, *Theme Gardens* is highly recommended. But even the armchair gardener will find it visually delightful—enough perhaps to inspire action.

The Low Maintenance Garden, Graham Rose, published in cooperation with New York Botanical Garden Institute of Urban Horticulture. Viking Press, 40 West 23rd St., New York, NY 10010, 1983. $12.95.

Graham's formula for low maintenance starts with planning and garden design. First, analyze soil conditions (pH, drainage, etc.) sun versus shade, and architectural features already present. Consider planting only those things which will thrive naturally (like bog plants in a poorly drained, wet area.) Having determined the kind of garden you will have, the site can be structured through pools, walkways, raised and/or sunken areas and large expanses of hard surface—brick, rock, gravel, tile, to create interesting patterns and a permanent basic framework for the plantings. Then by taking advantage of the latest improvements in watering and restricting plant choices to those specially bred for pest resistance, you can enjoy an attractive garden with minimal effort. Graham supports this thesis with beautiful color shots of successful gardens and a great number of practical, step by step, how-to-do it suggestions. Overall, this is a nice addition to a landscape library.

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NOW IS THE TIME

compiled by PENNY BUNKER

A CULTURAL CALENDAR OF CARE FROM OUR AFFILIATES

BEGONIAS MARGARET LEE

Now is the time

to take cuttings to increase your collection or to share.

to give a final feeding of the year in October, unless you have fed all year around with a balanced fertilizer.

to feed tuberous begonias in September as long as leaves remain green.

to start withholding water from the tuberous in October, and of course, do not feed them again.

BONSAI DR. HERBERT MARKOWITZ

Now is the time

to move deciduous trees to cool shaded areas (if you live in southern California) so they do not sprout new growth.

to maintain a regular watering schedule; keep moist but not wet. If temperatures are cool, be careful not to overwater.

to fertilize lightly in October if you failed to do so in September.

to transplant specimens that require a different pot or new soil, but any drastic removal of the root system should wait until early spring.

to remove all wires because the branches are growing larger. If the branches still need wire for training, put it on again this month but rewrap at a different position to avoid cutting into the bark.

to transplant or repot such trees as evergreens (black pines, Hinoki, juniper) and most deciduous trees such as bald cypress, maples, pomegranate, podocarpus. Be sure to disturb the roots as little as possible during this period.

BROMELIADS JOYCE BREHM

Now is the time

to begin cutting back on the watering schedule, but keep moist especially during the dry hot winds.

to water not more than once a week if weather turns cool.

to remove last pups (offshoots) before spring; if they are less than 1/3 their mother's size leave on until spring.

to cut fertilization to ¼ strength liquid formula,all purpose or balanced type.

to keep cup clean. Dump water from cups if it turns cold; this helps prevent center rot.

to maintain insect and snail control program. Put bait around plants, not in the cups.

CACTI & SUCCULENTS VERNA PASEK

Now is the time

to maintain a high moisture level, especially if dry hot winds occur.

to feed with low-nitrogen fertilizer.

to divide overgrown plants and propagate new growth.

to repot older rootbound plants—look for roots growing out of drainage holes.

to check for pests such as scale and mealybug, and take immediate action. Use full strength alcohol either with a spray or dab with cotton swabs.

to guard against slugs, snails, and insects.

to protect new growth from hot sun scald.

CAMELLIAS LES BASKERVILLE

Now is the time

to start and maintain a disbudding program leaving no more than one bud on a tip.

to maintain a watering schedule—do not allow plants to dry out.

to feed monthly with a 2-10-10 fertilizer.

to give feedings of iron.

to maintain a regular spraying program against pests.

to start 'gibbing' hybrids and reticulatas about the first of September. [Gibbing refers to the applica-

tion of gibberlelic acid to produce earlier and larger blooms.]

DAHLIAS **ABE JANZEN**

Now is the time

- to maintain a regular watering program until the first of October, then cut down gradually.
- to spray to prevent mildew and spider mite.
- to feed potash to promote growth of tuberous roots. Also, tubers are less liable to rot while in winter storage.
- to clean old leaves and stalks, preparing for fall and winter storage.

EPIPHYLLUMS **FRANK GRANATOWSKI**

Now is the time

- to maintain good grooming of your plants, by removing dead, non-productive, and unsightly branches, thus conserving energy for the remainder of the plant. Remember, the healthier branches will produce stronger blooms next spring.
- to protect plants from exposure to direct sunlight, and to prevent soil from completely drying out. An occasional misting or spraying of foliage can be very beneficial.
- to protect new growth from wind damage.
- to bait for snails and slugs. A few granules of Sluggeta at the base of the plant is a very effective deterrent and leaves little or no unsightly residue.
- to practice preventive maintenance regarding insect control. Use insecticide such as malathion or Orthene only if absolutely necessary. Be sure to read and follow instructions on the label!
- to protect the apples (seed pods) from pilferage by blue jays who are especially fond of the ripened fruit. In some cases rats have been known to feast on these delicacies.

FERNS **RAY SODOMKA**

Now is the time

- to water and maintain humidity by keeping the surrounding areas damp. Beware of hot, dry winds.
- to plant spore of all varieties.
- to fertilize plants regularly with a high nitrogen formula.
- to avoid direct sun, but give maximum light. Maintain temperature of 70° to 78° F.
- to trim off dead fronds.
- to repot house ferns to next size pot if overcrowded.
- to feed house fern (Boston fern) with 1/8 strength fertilizer every week and maintain humidity around plant with saucer pot or a pebble-filled saucer.
- to check for aphids, mealybugs, and scale: may use malathion. Keep snails, pillbugs, and slugs under control; use metaldehyde granules.

FUCHSIAS **WILLIAM SELBY**

Now is the time

- to protect plants from hot, dry winds.
- to maintain humidity by keeping area sprayed. Mist plants during hot, dry windy days, but do not overwater. It is best to water in the cool of the evening or early morning.
- to pick off faded blossoms and seed pods.
- to continue fertilizing for winter bloom.
- to spray for insect control, being sure to wet underside of leaves, the hiding place for egg laying insects.
- to take cuttings from good healthy branches, using only the tender tips. October is the better month to propagate new plants.
- to keep cuttings in a cool place for 4 to 6 days; keep wet but not soggy.

GERANIUMS **CAROL ROLLER**

Now is the time

- to water thoroughly when plants become somewhat dry. Allow the excess water to drain away. Keep foliage as dry as possible.
- to continue feeding a balanced fertilzer dissolved in water, using at half the recommended strength as often as needed to keep the plants growing well.
- to continue a pest and disease control program, using all products according to the manufacturer's directions.
- to begin pruning regals, scenteds, and similar types; at least one green leaf should be left on each stem.
- to make cuttings from the prunings. Shelter the cuttings from extreme weather.
- to keep unpruned plants well groomed by removing faded flowers and discolored leaves.
- to continue to rotate plants on a regular basis in order to produce well-shaped plants.

GESNERIADS **MIKE LUDWIG**

Now is the time

- to maintain watering program during dry, hot weather—which means more watering. Red spider will be a problem—spray with kelthane.
- to watch that plants remain in the shade as the sun is changing its position.
- to give less food to retard tender growth until after winter cold.
- to sterilize greenhouse, to have it ready for plants to be brought inside.
- to control pests. To prevent spread of disease and pests, check new plants and those to be brought in from outdoors.

IRISES SAN DIEGO–IMPERIAL COUNTIES IRIS SOCIETY

Now is the time

- to clean up beds and discard old fans and debris.
- to feed established tall-bearded that are not being divided.
- to divide and plant clumps of bearded iris.
- to plant beardless iris: spurias, Siberians, Louisianas, and Japanese varieties. Keep moist until well established. Louisianas and Japanese are grown in pots in pools or in swampy conditions.
- to control slugs and snails.
- to trim the unguicularis back so the flowers may show.
- to plant the Dutch bulbuous iris in October for spring bloom.

ORCHIDS CHARLIE FOUQUETTE

Now is the time

- to spray and mist on hot, dry days.
- to continue to water cybidiums heavily.
- to begin low-nitrogen feeding of cymbidiums.
- to give cymbidiums a lot of sun but do not burn.
- to continue snail-baiting. Watch for red spider mite.
- to feed cattleyas and keep moist.
- to check light intensity in glasshouses.
- to keep paphiopedilums moist.
- to spray varigata oncidiums in early part of day so they get dry by nightfall.
- to water and keep phals moist as they have no water storage facilities.
- to have a good air movement in hothouses.
- to stop feeding nobile dendrobiums fertilizer containing nitrogen. Continue light feeding of 0-10-10 or 0-20-20 fertilizer, tapering down as the weather turns cool and days are shorter.
- to be sure you do not overpot nobile dendrobiums as they like to be rootbound.
- to check for biting and sucking insects.

ROSES BRIAN DONN

Now is the time

- to water during dry, hot conditions.
- to cleanup debris, especially spent foliage from around bushes.
- to add a top dressing of manure after a thorough watering.
- to trim bushes and tall growth in early September and give a feeding for fine blooms in October.
- to do a cleanup spray for mildew, rust, control of insects, and worms. (Funginex is excellent.)
- to continue feeding program until mid-October.
- to control mites; a drenching spray containing kelthane is good.

VEGETABLES PENNY BUNKER

Now is the time

- to make the first planting of the cool season vegetables for winter by setting started plants now available—cabbage, chard, kale, and lettuce of all kinds.
- to plant seeds of mustard, peas, and the root vegetables.
- to water deeply as needed, instead of frequent light sprinkling—this will save both water and labor.
- to harvest vegetables now bearing heavily so they are in prime condition when used and the bushes and vines are encouraged to bear longer.
- to fertilize as needed so that plants grow vigorously and bear longer and more succulent edible parts.

GREEN THUMB ITEMS PENNY BUNKER

Now is the time

- to divide daylilies, agapanthus, Shasta daisies, belladonna lilies after blooming.
- to feed well established shrubs with a balanced fertilizer; water thoroughly.
- to dust and stake chrysanthemums, but do not pinch tips any more; disbud for larger blooms.
- to prepare bulb beds; add humus. Start looking for bulbs in nurseries. It is too early for most bulbs to be planted in warm-winter areas, but if purchased may be placed in an extra refrigerator for a few weeks before planting.
- to mulch acid-loving plants, using peat moss or ground bark.
- to plant spring flowers; calendulas, cinerarias, snapdragons, pansies.
- to plant in October watsonias, scillas, jonquils, and some daffodils.
- to plant winter-blooming sweet peas.

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THOMAS A. OBERBAUER